

CLAIMS

What is claimed is:

1. A method for detecting the presence of microorganisms in a sample, comprising the steps of:

(a) preparing a container comprising a medium portion to have a fluid culture medium for supporting the growth of microorganisms and an indicator portion to have a color-turning CO₂ indicator for detecting the presence of microorganisms;

(b) isolating said indicator portion from said medium portion by a CO₂ gas-permeable membrane;

(c) mixing a sample in said culture medium; and

(d) sealing said container entirely from outside atmosphere; wherein the presence of microorganisms is indicated by a color change of said CO₂ indicator.

2. A method for identifying the quantities of microorganisms in a sample, comprising the steps of:

(a) preparing a container comprising a medium portion to have a fluid culture medium for supporting the growth of microorganisms and an indicator portion to have a color-turning CO₂ indicator for detecting the presence of microorganisms;

(b) isolating said indicator portion from said medium portion by a CO₂ gas-permeable membrane;

(c) mixing a sample in said culture medium;

(d) sealing said container entirely from outside atmosphere; and

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(e) measuring time, starting from a moment when said container is sealed until a moment when color of said CO₂ indicator is turned into a predetermined color; the initial quantities of microorganisms being obtained by comparing measured time against contents of a table which holds pre-collected time data on each microorganism species of known initial quantities in known amount of sample.

3. A microbial detection indicator tool comprising a color-turning CO₂ indicator and a CO₂ gas-permeable membrane which is a transparent bag enclosing said indicator and which isolates said indicator from a fluid culture medium containing a sample.

4. A microbial detection container tool comprising a medium portion having a fluid culture medium for supporting the growth of microorganisms, an indicator portion having a color-turning CO₂ indicator for detecting the presence of microorganisms, a CO₂ gas-permeable membrane isolating said indicator portion from said medium portion, and a container accommodating said indicator portion, said membrane and said medium portion, said container having a transparent portion for verifying said indicator portion from outside and having a capability of sealing entirely from outside atmosphere.

5. A microbial detection system comprising:

(a) a loading portion for a microbial detection container tool which comprises a medium portion having a fluid culture medium for

supporting the growth of microorganisms, an indicator portion having a color-turning CO₂ indicator for detecting the presence of microorganisms, a CO₂ gas-permeable membrane isolating said indicator portion from said medium portion, and a container accommodating said indicator, said membrane and said medium, said container having a transparent portion for verifying said indicator portion from outside and having a capability of sealing entirely from outside atmosphere;and

(b) a sensor for detecting a color change of said CO₂ indicator in said container placed on said loading portion, and to send a microorganism detection signal to an alarm; and

(c) an alarm for informing of detection of microorganisms, according to the microorganism detection signal provided by said sensor.

6. A microbial growth time measuring system comprising:

(a) a loading portion for a microbial detection container tool which comprises a medium portion having a fluid culture medium for supporting growth of microorganisms, an indicator portion having a color-turning CO₂ indicator for detecting presence of microorganisms, a CO₂ gas-permeable membrane isolating said indicator portion from said medium portion, and a container accommodating said indicator, said membrane and said medium, said container having a transparent portion for verifying said indicator portion from outside and having a capability of sealing entirely from outside atmosphere;

(b) a sensor for detecting a color change of said CO₂ indicator in said container placed on said loading portion, and for sending a microorganism detection signal to a timer; and

(c) a timer for measuring time, starting from the moment when said container containing a test sample is placed on said loading portion until a moment when the microorganism detection signal is received from said sensor.

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